

## SOME NEW CLADONIAS.

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IN June, 1923, the writer sent a collection of Cladonias from Wareham, Massachusetts, to H. Sandstede, the eminent German Cladoniologist, for examination. Some of the material he, in turn, sent to Dr. Wainio. The final report has been received and it is of interest to note that the lot yielded a new species, a new form, and two new modifications.<sup>1</sup> These should be recorded and it seems advisable to record also certain other plants, hitherto undescribed, some of which belong with them. All are more or less common throughout the Buzzards Bay region and hence it appears likely that some or all of them will be found in other localities.

Dr. Wainio's comments upon the two new plants named by him are relative to the exhaustive analyses of Cladonia species as worked out by him in his *Monographia Cladoniarum*, particularly in volumes one and two. As the comments in themselves furnish little help to the collector in determining the plants, descriptions are added, together with a statement of the differences between each plant and related species or forms which, it is hoped, will make identification possible.

1. CLADONIA **clavulifera** Wainio, sp. nov., affinis *Cl. mitrulae* Tuck. sed apotheciis parvis, furcis et podetiis subcontinuis corticatis (KOH non reagentibus) ab ea differens textura podetiorum, a *Cl. alpicola* var. *Karelica* Wain. distinguitur.

The species belongs with the club-shaped Cladonias. The primary squamules are persistent or disappearing, 3–10 mm. long, irregularly lobed or incised, esorediate; podetia 5–35 mm. long, 1–5 mm. in diameter, club-shaped, erect, the sides entire or often terminated by apothecia, simple or basally branched, usually somewhat digitately short-branched at the tips; cortex continuous to areolate, smooth, rugose, or somewhat warty, esorediate, esquamulose, or sparingly squamulose toward the base, glaucescent to subolivaceous; apothecia brown to brownish-black.

In clusters or colonies; on sand and sandy loam; often in old fields and open woods. Among our New England Cladonias the species is perhaps nearest in appearance to *Cl. subcariosa* (Nyl.) Wainio. The latter, however, is KOH red. It might also be confused with *Cl. cariosa* (Ach.) Spreng., var. *corticata* Wainio. That plant differs in

<sup>1</sup> According to Wainio's subdivision of Cladonia species, var. = varietas constantior; f. = forma autogenetica inconstans; m. = modificatio inconstans statione producta.



being lighter in color, more branched with the branches longer and slenderer, KOH yellow or yellowish. *Cl. clavulifera* is probably more or less widely distributed and there is reason to suspect that it is represented in American herbaria under one or the other of these names and also under that of *Cl. symphyocarpa* Fr. Wainio has shown, however, (*Acta Soc. pro Fauna et Flora Fennica* **10**: 55. 1894, often cited as *Mon. Clad.* **2**: 55. 1894) that this Friesian species is a compound conception with *Cl. cariosa* (Ach.) Spreng., var. *corticata* Wainio as one of the components and *Cl. alpicola* (Flot.) Wainio, var. *Karelica* Wainio as another.

m. **subvestita** Robbins, m. nov. Similar to typical form of the species but with the podetia squamulose throughout. Common in the Buzzards Bay region, often occurring with the species.

2. *CLADONIA CARASSENSIS* Wainio, *Acta Soc. pro Fauna et Flora Fennica* **4**: 313. 1887, often cited as *Mon. Clad.* **1**: 313. 1887. This species is recorded from but one locality "In montibus Carassae in provincia Minarum, Brasiliae." In the Brazilian plants the podetia are "albida aut rarius cinereo-fuscescenti-variegata." One form and two modifications are recognized. They are

f. **IRREGULARIS** Wainio, l. c. Podetia 20–80 mm. long, esquamulose; cups oblique.

m. **REGULARIS** Wainio, *Acta Soc. pro Fauna et Flora Fennica* **14**: 237. 1897, often cited as *Mon. Clad.* **3**: 237. 1897. f. *regularis* Wainio, *Ibid.* **4**: 315. 1887, often cited as *Mon. Clad.* **1**: 315. 1887. podetia 20–30 mm. long, esquamulose; cups regular.

m. **DIGRESSA** Wainio, *ibid.* **14**: 237. 1897, often cited as *Mon. Clad.* **3**: 237. 1897. f. *digressa* Wainio, *ibid.* **4**: 315–316. 1887, often cited as *Mon. Clad.* **1**: 315–316. 1887. Podetia 20–30 mm. long, squamulose principally at the margins of the cups; cups regular to obsolete.

f. **subregularis** Wainio, f. nov. Podetia olivacea- et glauco-variegata differens.

This form has the primary squamules persistent or disappearing, small to medium size, crenate to subdigitately lobate, esorediate, KOH yellow; podetia 20–40 mm. long, 1–4 mm. in diameter, subcylindrical or irregularly turgescens, scyphiferous, simple or repeatedly proliferate from the margins of the cups; cups moderately dilated, 3–7 mm. in diameter, perforate, regular; cortex continuous or areolate, usually smooth, esorediate, and without granules, esquamulose or sparingly squamulose toward the base, glaucescent and olivaceous variegated, KOH yellow; apothecia small to medium size, solitary or clustered, light brown becoming darker.

In clusters and colonies, often intermixed with related forms or other species; on sandy loam in dry, upland woods, on peaty soil on bog margins, occasionally on decaying and decayed wood. This form



differs from *m. regularis* only in color. The species as it is represented in this region always manifests this color difference while at the same time it exhibits variations similar or somewhat similar to the form and to the other modification established by Wainio.

f. **obliqua** Robbins, f. nov. Podetia 20–70 mm. long, glaucescent and olivaceous variegated, esquamulose or sparingly squamulose toward the base; cups oblique.

m. **spectabilis** Robbins, m. nov. Podetia 20–70 mm. long, glaucescent and olivaceous variegated, squamulose throughout; cups regular to oblique.

Wainio observes of the species (l. c.) “Facie externa fere est sicut *Cl. crispata*.” Our plants also closely approach forms of *Cl. squamosa* (Scop.) Hoffm. Neither, however, affords the yellow reaction. *Cl. subsquamosa* (Nyl.) Wainio is likewise somewhat similar in construction and agrees further in its response to caustic potash. It differs in having the podetia more or less granular.

3. CLADONIA FURCATA (Huds.) Schrad., var. RACEMOSA (Hoffm.) Floerk. Wainio, Acta Soc. pro Fauna et Flora Fennica 4: 316. 1887, often cited as Mon. Clad. 1: 316. 1887. m. **subclausa** Sandstede, m. nov. Podetia 25–40 mm. long, 0.5–2 mm. in diameter, erect or decumbent, cylindrical or subcylindrical, esquamulose or squamulose toward the base, much branched especially upward; branches subregularly or radiately disposed, the upper ascendent to erect, the sterile summits slightly expanded and somewhat truncate with 2–5 irregularly or radiately spreading points thus forming small, imperforate or sometimes minutely perforate pseudo-cups; cortex smooth, continuous to areolate, esorediate, glaucescent to olivaceous.

In small or large clusters; on sandy loam, often in open woods. Common locally. This plant resembles *m. subulata* Floerk. but the two are easily distinguishable since the latter has the sterile summits forked and subulate, (cf. Tuckerman, Synopsis 1: 248. 1882).

4. CLADONIA SUBCARIOSA (Nyl.) Wainio, Acta Soc. pro Fauna et Flora Fennica 10: 38. 1894, often cited as Mon. Cl. 2: 38. 1894. m. **squamulosa** Robbins, m. nov. Podetia 5–35 mm. long, 1–4 mm. in diameter, erect, club-shaped, more or less densely squamulose.

On sandy loam; often in old fields among grass. This plant differs from the species only in the squamulose podetia.

5. CLADONIA UNCIALIS (L.) Web. Wainio, Acta Soc. pro Fauna et Flora Fennica 4: 254. 1887, often cited as Mon. Clad. 1: 254. 1887. m. **soraligera** Robbins, m. nov. Podetia 10–50 mm. long, 1–3 mm. in diameter, erect or decumbent, sorediate; soredia aggregated in somewhat rounded, scattered masses, 1–12 mm. in diameter.

In small or large colonies, occasionally in subprostrate patches. On sand or sandy loam; in dry, open, mixed woods. All forms of the species, common in this region, seem liable to produce soredia although it sometimes happens that in a colony of plants not all will be sorediate. The species is cosmopolitan in its distribution and it has always been



considered an esorediate plant. That condition, however, may prove to be not uncommon in different parts of its range as is the case with *Cl. sylvatica* (L.) Harm. which was likewise looked upon as an esorediate species until Sandstede found it in Europe in a sorediate state (*m. sorediata* Sandst.) and which occurs also in the Buzzards Bay region.

The following plants were also reported. All are well known in Europe but are not mentioned in New England lists.

6. *CLADONIA STREPSILIS* (Ach.) Wainio, Acta Soc. pro Fauna et Flora Fennica **10**: 403. 1894, often cited as Mon. Clad. **2**: 403. 1894. On sandy or gravelly loam; in old fields, upland woods and roadsides. The species is abundant in Plymouth County and even more so in parts of Norfolk County, as at Stoughton where it often spreads over old upland pastures in dense colonies. The writer collected it in June, 1923, from near the summit of Mount Wachusett. It probably has a wide distribution but seems to be little known in this country. Willey sent it to Wainio from New Bedford as "*Cl. alcornis*." (l. c. 408) and G. K. Merrill (Bryologist **12**: 93. 1909) states that it "has by many authors been referred to *Cl. cariosa*." It is stouter than that species and the primary squamules are coarser, often much elongated. A greenish or bluish-green reaction to chloride of lime is unique among *Cladonia* species. The specimens sent appear to have been *f. glabrata* Wain. (*podetia* esquamulose). Locally there is also *m. corraloidea* Wain. (*podetia* squamulose).

7. *CLADONIA PITYREA* (Floerk.) Fr., var. *ZWACKHII* Wainio, *f. SUBACUTA* Wainio, Acta Soc. pro Fauna et Flora Fennica **10**: 355. 1894, often cited as Mon. Clad. **2**: 355. 1894. On tree bases, decayed wood, often among mosses in moist places. Common. This form has the *podetia* decorticate, granulose, esquamulose and without cups. Recorded by Fink from Minnesota (Lichens of Minnesota. Contr. Nat. Herb. **14**: 129. 1910).

*m. HOLOLEPIS* (Floerk.) Wainio l. c. 355. In similar situations as *f. subacuta* but less common. Apparently not before recorded from North America. The plant differs from *f. subacuta* in having the *podetia* more or less squamulose and with cups. Tuckerman does not mention *Cl. pityrea* but according to Wainio (l. c. 363) *Cl. squamosa*, Hoffm., *f. botryoides* Tuckerman, Syn. **1**: 246. 1882, belongs with the present species.

ONSET, MASSACHUSETTS.